

AMENDMENTS TO THE CLAIMS

Claims 1 to 12. (Cancelled)

Claim 13. (Currently Amended) A method for producing an evolved protein involved in methionine biosynthesis pathway, the method comprising:

a) ~~generating a directed genetic modification in a gene of interest~~ disrupting *metE* gene in an initial microorganism to yield a modified microorganism, ~~wherein the production or consumption of a substrate is inhibited when the modified microorganism is grown on a defined medium;~~ wherein the ability of the modified microorganism to grow is impaired when the modified microorganism is grown on a minimal medium containing no methionine, S-adenosylmethionine, homocysteine, or cystathionine;

b) culturing the modified microorganism obtained in step (a) on the ~~defined~~ minimal medium for multiple generations, under selection pressure in the presence of methylmercaptan, allowing the modified microorganism to evolve a metabolic pathway to compensate for ~~the~~ impaired growth, ~~wherein the defined medium can contain a co-substrate promoting the evolution;~~

c) selecting an evolved microorganism from step (b) able to grow on the ~~defined~~ minimal medium further comprising methylmercaptan, wherein at least one protein has evolved in the ~~metabolic~~ methionine biosynthesis pathway allowing the modified microorganism to produce methionine and proliferate; and

d) isolating the evolved protein.

Claim 14. (Currently Amended) The method as claimed in Claim 13, ~~characterized in that~~ wherein the produced isolated evolved protein is purified.

Claims 15 to 43. (Cancelled)

Claim 44. (Currently Amended) The method of claim 13, wherein disruption of the *metE* gene is performed by genetic modification ~~comprises the directed mutation or deletion of a gene of interest~~ the *metE* gene or the directed modification of a promoter of the *metE* gene in the gene of interest.

Claim 45. (Currently Amended) The method of claim 13, wherein the disruption genetic modification ~~consists in the~~ comprises removal of most of the metE gene ~~of interest~~.

Claim 46. (Currently Amended) The method of claim 13, wherein the metE gene ~~of interest~~ is replaced with a selection marker gene.

Claim 47. (Currently Amended) The method of claim 13, wherein the microorganism is a bacterium ~~selected among bacteria, yeasts and fungi~~.

Claim 48. (Currently Amended) The method of claim 13, wherein the microorganism is selected from ~~*Aspergillus sp.*, *Bacillus sp.*, *Brevibacterium sp.*, *Clostridium sp.*, *Corynebacterium sp.*, *Escherichia sp.*, *Gluconobacter sp.*, *Pseudomonas sp.*, *Rhodococcus sp.*, *Saccharomyces sp.*, *Streptomyces sp.*, *Xanthomonas sp.*, or *Candida sp.*~~

Claim 49. (Currently Amended) The method of claim ~~13~~ 48, wherein the microorganism is *E. coli* ~~or *C. glutamicum*~~.